WE CLAIM:

1. A safety insert designed to be mounted in an assembly comprising a tire and a rim of a vehicle and radially on the outside of the rim, said insert having a radially outer bearing surface which defines a radial bearing for the crown of the tire when said tire is deflated and means for generating vibrating warning signals on a run-flat condition, characterized in that said means generate signals oriented parallel to the axis of rotation of the tire and rim assembly.

2. A safety insert according to Claim 1, in which the bearing surface of the insert presents a variation of transverse position according to the azimuth of said bearing.

3. A safety insert according to Claim 1, in which the bearing surface of the insert contains straight ribs, the circumferential orientation of which varies with their azimuth.

4. A safety insert according to Claim 1, in which the bearing surface of the insert contains elements generating a transverse stress upon their radial compression.

5. A safety insert according to Claim 4, in which the elements comprise ribs or ~~strips~~ inclusions whose inclinations relative to a longitudinal plane vary with their azimuth.

6. A safety insert according to Claim 4, in which the bearing surface has an appreciably constant rolling radius under bearing.

7. A safety insert according to Claim 1, in which the bearing surface presents at least two axially adjacent zones, the zone intended to be placed outward from the vehicle not containing means for generating signals oriented parallel to the axis of rotation of the tire and rim assembly.

8. A safety insert according to Claim 1, including means for generating vertical signals.

9. A safety insert according to Claim 1, in which the bearing surface contains an active zone of generation of signals, such that said signals present a maximum preceded and followed by a minimum in the opposite direction.

10. A safety insert according to Claim 9, in which said active zone lies between ¼ and ½ of the circumference of said insert.

11. A safety insert according to Claim 9, in which the absolute value of the minima of the signal generated lies between ¼ and ¾ of the absolute value of the maximum.

12. A device for detecting the bearing of a tire of a vehicle, equipped with a plurality of tire, rim and safety insert assemblies, the insert of each assembly being mounted between the rim and the radially inner face of the tire tread, on the corresponding safety insert, each assembly being capable of triggering the emission of a vibrating signal when the tire comes in contact with the insert after a pressure loss in the tire, comprising means of detection and treatment of said vibrating signal, including a single sensor capable of being mounted on the vehicle and sensitive to the signals emitted by each of the said assemblies, when the corresponding tire comes in contact with the respective insert, and an indicator capable of signaling to the occupant of the vehicle a run-flat condition in response to a signal picked up by said sensor.

13. A device according to Claim 12, in which the vibrating signal is maintained by running flat.

14. A device according to Claim 12, including a pressure-sensitive generator and in which the vibrating signal is a signal emitted by a pressure-sensitive generator.

15. A device according to Claim 12, in which the vibrating signal is an acoustic signal.

16. A device for detection of bearing of a tire of a vehicle, equipped with a plurality of tire, rim and safety insert assemblies in which the safety inserts are mounted between the rim and the radially inner face of the tire tread, on the corresponding safety insert, each assembly being capable of transmitting a characteristic vibration to the chassis of the vehicle in response to the bearing of one of the tires on the corresponding safety insert as a result of a pressure loss in the tire, comprising:

- means of detection and treatment of such predetermined characteristic mechanical vibration of the chassis of the vehicle; and
- means of transmission of an alarm.

17. A device according to Claim 16, in which the vehicle has at least two axles and the means of detection of a predetermined characteristic vibration of the chassis of the vehicle comprise one and not more than one sensor per axle of said vehicle.

18. A device according to Claim 17, in which the means of detection of a predetermined vibration of the chassis of the vehicle comprise a single sensor connected to the vehicle.

19. A device according to Claim 18, in which the means of detection of a predetermined characteristic vibration of the vehicle comprise a single sensor rigidly connected to the chassis of the vehicle.

20. A device according to Claim 16, in which the characteristic vibration transmitted to the chassis by the tire, rim and insert assembly includes a component oriented parallel to the axis of rotation of said assembly.

21. A device according to Claim 12 or Claim 16, in which the treatment means calculate a first characteristic magnitude in at least a first given frequency band, calculate a criterion C corresponding to a given combination of the preceding first characteristic magnitude or magnitudes, compare that criterion C to a given threshold and trip an alarm when the result of the comparison follows a given ratio.

22. A device according to Claim 21, in which, for each of the axles of the vehicle, the treatment means calculate a first characteristic magnitude in at least a first frequency band specific to said axle of the vehicle.

23. A device according to Claim 22, in which the treatment means calculate a criterion C corresponding to a weighted value of said first characteristic magnitudes of said first frequency bands specific to said axles of the vehicle.

24. A device according to Claim 21, in which the first frequency band or bands lie between 20 and 100 Hz.

25. A device according to Claim 21, in which the treatment means further determine the frequency of rotation of the tire and in which said first frequency band or bands are narrow frequency bands, each centered on a multiple frequency of said frequency of rotation of the tire.

26. A device according to Claim 25, in which said first frequency band or bands lie between 10 and 200 Hz.

27. A device according to Claim 21, in which the means of treatment of the vibrations of the chassis further calculate a second characteristic magnitude in at least a given second frequency band, so that, in said second band, said vibrations are appreciably independent of bearing of the tire on its safety insert and so that the alarm tripping threshold is a function of said second characteristic magnitude.

28. A device according to Claim 27, in which said second frequency band lies between 3 and 7 hz.

29. A device according to Claim 27, in which said second frequency band lies between 100 and 200 hz.

30. A device according to Claim 27, in which said second bands are situated outside the multiple frequencies of the frequency of rotation of the tire.

31. A device according to Claim 21, in which the characteristic magnitude measured is the vibrational energy of the signals expressed by the rms value.

32. A device according to one of Claims 12 or 16, in which the treatment means do not transmit any alarm when the speed of the vehicle is below a given threshold.

33. A tire designed to equip a tire, wheel and safety insert assembly in which the safety insert is mounted between the rim and the radially inner face of the tire tread, characterized in that said tire is equipped with means capable of generating a vibrating signal when said tire comes in contact with a corresponding insert following a pressure loss in said tire.